

Claims

1. Polyurethane-based pressure-sensitive adhesive, characterized in that the
5 polyurethane is composed of the following starting materials which are reacted
catalytically with one another in the stated proportions:
 - a) at least one aliphatic or alicyclic polyisocyanate having a functionality of in each
case less than or equal to three,
 - b) a combination of at least one polypropylene glycol diol and at least one
10 polypropylene glycol triol,
the ratio of the number of hydroxyl groups in the diol component to the number of
hydroxyl groups in the triol component being less than 10, preferably between 0.2
and 5,
additionally the ratio of the number of isocyanate groups to the total number of
15 hydroxyl groups being between 0.8 and 1.15, preferably between 0.95 and 1.05,
more preferably between 1.0 and 1.05,
the catalyst for the reaction to the polyurethane consisting of or comprising a
bismuth carboxylate or bismuth carboxylate derivative, and
the diols and triols alternatively being selected and combined in each case as
20 follows:
 - diols having a molecular weight of less than or equal to 1000 are combined
with triols whose molecular weight is greater than or equal to 1000, preferably
greater than or equal to 3000,
 - diols having a molecular weight of greater than 1000 are combined with triols
25 whose molecular weight is less than 1000.
2. Pressure-sensitive adhesive according to Claim 1, characterized in that the aliphatic
or alicyclic polyisocyanates are diisocyanates, especially diisocyanates having in
each case an asymmetrical molecular structure.
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3. Pressure-sensitive adhesive according to Claim 1 or 2, characterized in that the
polyisocyanate is butane 1,4-diisocyanate, tetramethoxybutane 1,4-diisocyanate,
hexane 1,6-diisocyanate, ethylene diisocyanate, 2,2,4-trimethylhexamethylene
diisocyanate, ethylethylene diisocyanate, dicyclohexylmethane diisocyanate,
35 1,4-diisocyanatocyclohexane, 1,3-diisocyanatocyclohexane, 1,2-diisocyanatocyclo-

hexane, 1,3-diisocyanatocyclopentane, 1,2-diisocyanatocyclopentane, 1,2-diisocyanatocyclobutane, 1-isocyanatomethyl-3-isocyanato-1,5,5-trimethylcyclohexane (isophorone diisocyanate), 1-methyl-2,4-diisocyanato-cyclohexane, 1,6-diisocyanato-2,2,4-trimethylhexane, 1,6-diisocyanato-2,4,4-trimethylhexane, 5-isocyanato-1-(2-isocyanatoethyl-1-yl)-1,3,3-trimethylcyclohexane, 5-isocyanato-1-(3-isocyanatoprop-1-yl)-1,3,3-trimethylcyclohexane, 5-isocyanato-1-(4-isocyanatobut-1-yl)-1,3,3-trimethylcyclohexane, 1-isocyanato-2-(3-isocyanatoprop-1-yl)cyclohexane, 1-isocyanato-2-(2-isocyanatoethyl-1-yl)cyclohexane, 2-heptyl-3,4-bis(9-isocyanatononyl)-1-pentylcyclohexane, norbornane diisocyanatomethyl or a chlorinated, brominated, sulphur-containing or phosphorus-containing aliphatic or alicyclic diisocyanate and/or a derivative of the diisocyanates listed, especially dimerized or trimerized types, very preferably isophorone diisocyanate.

4. Pressure-sensitive adhesive according to at least one of Claims 1 to 3, characterized in that at least one of the polypropylene glycols used has originated from a DMC catalyzed preparation process.

5. Pressure-sensitive adhesive according to at least one of Claims 1 to 4, characterized in that a polypropylene glycol triol is used which has been prepared by DMC catalysis.

6. Pressure-sensitive adhesive according to at least one of Claims 1 to 5, characterized in that formulating ingredients such as catalysts, ageing inhibitors (antioxidants), light stabilizers, UV absorbers, rheological additives, and other auxiliaries and additives have been mixed in.

7. Process for preparing a pressure-sensitive adhesive according to at least one of the preceding claims, where

a) a vessel A is charged substantially with the premixed polypropylene glycol combination (polyol component) and a vessel B is charged substantially with the isocyanate component, it being possible for the other formulating ingredients to have been mixed into these components beforehand in a standard mixing procedure,

b) the polyol component and the isocyanate component are conveyed via precision pumps through the mixing head or mixing tube of a multi-component mixing and metering unit, where they are homogeneously mixed and so brought to reaction,

- c) the chemically inter-reacting components mixed in this way are applied immediately thereafter to a sheet-like backing material which is preferably moving at constant speed,
- d) the backing material coated with the reactive polyurethane composition is passed through a heating tunnel in which the polyurethane composition cures to the pressure-sensitive adhesive,
- e) finally the coated backing material is wound up in a winding station.

8. Process for preparing a pressure-sensitive adhesive according to at least one of the preceding claims, characterized in that the preparation takes place without solvent.

9. Process for preparing a pressure-sensitive adhesive according to at least one of the preceding claims, characterized in that the preparation takes place without addition of water.

10. Use of a pressure-sensitive adhesive according to at least one of the preceding claims for producing self-adhesive articles.

11. Use of a pressure-sensitive adhesive according to at least one of the preceding claims for the redetachable fastening without damage or residue of small articles having sensitive surfaces, made for example from polar plastic, glass or metal, particularly in magazines, newspapers, books, letters or to papers in general.